Simon (Sir J.), F.R.S. English Sanitary Institutions. 8vo. *London* 1890. The Author.

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March 27, 1890.

Sir G. GABRIEL STOKES, Bart., President, in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "On Black Soap Films." By A. W. REINOLD, M.A., F.R.S., and A. W. RÜCKER, M.A., F.R.S. Received March 1, 1890.

[Publication deferred.]

II. "The Variability of the Temperature of the British Isles, 1869—1883, inclusive." By ROBERT H. SCOTT, F.R.S. Received March 3, 1890.

[PLATE 9.]

The mean diurnal variability of temperature has been the subject of several papers which have appeared in the 'Zeitschrift der Oest. Gesells. für Meteorologie,' and elsewhere. Of these the most important is that by Dr. Julius Hann, entitled "Untersuchungen über die Veränderlichkeit der Tagestemperatur."* This paper contained, for ninety stations, distributed over the earth's surface, the mean diurnal variability of temperature—that is, the mean difference of the temperature of each day from that of the next—and also the frequency of a variation of 2° C., 4° C., 6° C., &c., in each month. Dr. Hann also investigated for a few stations the probability of a change of 2° C. and of 4° C.

In the case of some of the stations taken by Dr. Hann the figures compared were not daily means, but actual readings at corresponding hours on successive days. In such cases the results for variability

* 'Sitzungsberichte der K. Akad. der Wiss. in Wien,' vol. 71, 1875.

naturally come out higher than when means for the whole day are taken.

The only British stations among the ninety were Makerstoun for five years, 1842–46, and Oxford for ten years, 1860–70 (the year 1869 being omitted). The Makerstoun means were obtained from different combinations of hours in different years, and the Oxford figures from twelve bi-hourly readings of the thermograph curves.

Inasmuch as daily mean temperatures derived from twenty-four hourly measurements of the thermograms exist at the Meteorological Office for the seven observatories during the period of their continuance, the fifteen years 1869–83 inclusive, it seemed desirable to discuss this amount of material so as to exhibit the results for these islands as an instance of a typically insular climate.

The method followed has been to extract the differences between the successive daily means, irrespective of sign, and then to take the average of the figures so obtained for each month.

The mean of these fifteen monthly values gives the mean monthly variability from the station, and this is shown in Table I.

I have appended to the tables the values given by Hann for Oxford and Makerstoun, as well as for three Continental stations, as specimens of excessive variability, and finally those for Georgetown, Demerara, as exhibiting the great constancy of temperature in that tropical locality. The last-named figures are the result of six years' observations, probably by P. Sandeman, though that is not expressly stated.

It will be seen at once that the figures for our seven observatories are much lower than those for either Oxford or Makerstoun. This may possibly be due to the fact that the periods for those two records are both of them less than fifteen years, and they are not equal to each other or synchronous.

The contrast between the British stations and the three stations of Vienna, St. Petersburg, and Barnaul is very remarkable, as is also, in the other direction, that with Georgetown, where the average on the whole year is only 1°·1 F.

Dealing with our own returns, it will be seen that the mean annual difference is greatest (2°·7) at Kew: then follow Armagh, Glasgow, and Stonyhurst with 2°·5, Aberdeen with 2°·4, and the list is closed by Falmouth and Valencia with 1°·9.

The annual range of these differences is very similar at all the seven stations, reaching a maximum in December and a minimum in August. The chief exceptions to this assertion are that at Kew the maximum of 3°·3 occurs in January and November, not in December, and that at the two south-western observatories, Falmouth and Valencia, the minimum is in July.

The highest absolute figure in any month is 5°·4, for Glasgow

Table I.—Mean Variability of Temperature.

Station.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Valencia	2·6	2·1	2·1	1·8	1·5	1 4	1·3	1·4	1·6	2·1	2·3	2 7	1·9
Armagh	3·1	2·7	2·7	2·2	2·0	1·9	2·0	1·8	2·2	2·7	3·0	3·4	2·5
Glasgow	3·0	2·7	2·6	2·1	1·9	2·0	2·0	1·7	2·1	2·8	3·1	3·4	2·5
Aberdeen	2·9	2·6	2·5	2·1	2·3	2·1	2·0	1·8	2·1	2·7	2·8	3·2	2·4
Falmouth	2·5	2·1	2·1	1·6	1·5	1·4	1·3	1·4	1·5	2·0	2·5	2·5	1·9
Stonyhurst	3·0	2·7	2·6	2·3	2·2	2·2	2·2	2·0	2·1	2·7	2·9	3·2	2·5
Kew	3·3	3·0	2·9	2·4	2·5	2·3	2·3	2·2	2·4	3·1	3·3	3·2	2·7
Oxford	3·4	3·1	2·9	3·1	3·1	2·7	2·3	2·5	2·5	3·6	3·6	3·9	3·1
Makerstoun	4·1	4·0	3 2	2·7	3·2	3·2	3·1	2·5	3·1	3·1	4·7	4·7	3·4
Vienna	3·8	3·6	3·2	3·4	3·2	3·4	3·4	3·2	3·1	2·7	3·2	3·6	3 4
St. Petersburg	5·9	5·9	5·0	3·2	4·0	3·1	2·7	2·2	3·1	3·2	4·1	5·4	4·0
Barnaul	8·8	8·5	7·2	4·7	5·6	4·3	3·4	3·2	4·5	5·6	9·0	10·1	6·3
Georgetown (Demerara)	0·9	0·9	0·7	1·1	1·4	1·3	1·4	1·3	0·7	0·9	1·3	1·3	1·1

in November, 1880, and the lowest, 0°·7, for Valencia in July, 1879.

In the detailed table at the end of this section, Table III, the mean values for each month will be found.

It has been suggested that it would be important to investigate as to whether temperature changes in these islands show more sudden positive than negative alterations. In Hindostan (Calcutta and Lahore) Mr. Blanford, in his 'Climate and Weather of India,' p. 12, states that there "rapid falls of temperature are between two and three times as frequent as rises, and, on the whole, greater in amount."

A preliminary inquiry as to all the changes during a month led to no decisive result, the number of + signs and of − signs being nearly equal. It therefore seemed best to take only the changes exceeding 5°, and, further, to mark specially those above 10°, 15°, and 20° respectively.

The following table, Table II, gives the total number of changes exceeding 5° during the entire series of years, with the mean amount of the change arranged in two sets of two columns each, marked R. and F. for rise and fall. Underneath these figures is given the number of changes exceeding 10°, &c., but without mean values.

Table II.—Variations exceeding 5°, arranged according to sign.

Valencia. Armagh.

	R.		F.		R.		F.	
	No.	Mean value.	No.	Mean value.	No.	Mean value.	No.	Mean value.
Exceeding 5°	167	6·7	167	6·2	345	6·8	338	6·7
10°	3	..	1	..	25	..	16	
15	1							
20								

Glasgow. Aberdeen.

	R.		F.		R.		F.	
	No.	Mean value.	No.	Mean value.	No.	Mean value.	No.	Mean value.
Exceeding 5°	323	7·0	346	6·7	334	7·0	325	7·0
10°	29	..	20	..	22	..	25	
15	..	..	..	..	..	..	2	
20	..	..	..	..	1			

Falmouth. Stonyhurst.

	R.		F.		R.		F.	
	No.	Mean value.	No.	Mean value.	No.	Mean value.	No.	Mean value.
	157	6·3	143	6·2	332	7·0	349	6·7
Exceeding 10°	2	..	3	..	24	..	19	
15	..	..	..	..	..	..	2	
20								

Kew.

	R.		F.	
	No.	Mean value.	No.	Mean value.
	430	7·1	420	6·8
Exceeding 10°	34	..	29	
15	2			
20				

It will be seen that at every observatory except Glasgow the total number of rises exceeding 5° is greater than that of falls of the same amount, and also that the mean value of the rises exceeds that of the falls, except at Aberdeen, where the two numbers are equal.

Accordingly, in these islands we have the opposite conditions to those prevailing in India, and sudden rises of temperature are more frequent and of greater amount than sudden falls.

The same fact, as regards frequency, comes out, with two slight exceptions, as regards changes exceeding 10°.

The instance exceeding 20° at Aberdeen deserves some notice. It occurred December 16, 1882, and was a rise of 23°·8. On that day at Braemar, not far from Aberdeen, the thermometer stood at 9 A.M. 44°·2 higher than at the corresponding hour on the previous day, the respective readings being −8°·3 and 35°·9. It is remarkable that this excessive change of temperature was very local, for at Dundee the difference between the successive 9 A.M. readings was only 28°·9, and at Glasgow the difference between the successive daily mean temperatures was only 12°·6, or more than 11° less than at Aberdeen.

We next come to deal with the figures for frequency in Table III.

These are obtained by arranging the changes, irrespective of sign, according to their magnitude. Six subdivisions were made 0°—0°·9, 1°·0—4°·9, 5°·0—9°·9, 10°·0—14°·9, 15°·0—19°·9, 20°·0—24°·9.

The first two of these subdivisions, taken together, cover the same range of five degrees as any one of the others, but, inasmuch as by far the greater number of changes were below 5°·0, it seemed to be worth while to ascertain how many fell short of one degree.

The total numbers were then divided by 15, the number of years, so as to obtain the mean monthly number of changes in each subdivision. The total of the figures for each month amounts to the number of days in the month.

It will be seen throughout the table how the range of changes is least at the two Atlantic stations, Falmouth and Valencia.

In every month and at every station the mean number of changes between 1°·0 and 4°·9 exceeds one-half of the number of days in the month. At Valencia, in July, the changes below 1°·0 nearly equal those between 1°·0 and 4°·9, the figures being 14°·6 and 15°·9 respectively.

Table III.—Monthly Mean Variability in each Year and Frequency of Variation.

VALENCIA.—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	2·1	2·4	1·8	2·2	1·9	1·2	1·5	1·7	2·1	1·9	3·1	2·8	1869
70	2·5	2·1	2·6	1·7	1·4	1·7	1·8	1·9	1·9	2·8	2·1	3·6	70
71	2·2	1·9	2·3	1·4	2·4	1·3	1·0	1·4	2·0	2·3	2·7	2·4	71
72	2·4	1·6	2·2	1·7	1·6	1·4	1·1	1·6	1·6	2·0	2·3	2·5	72
73	2·7	2·6	1·6	2·2	1·5	1·0	1·6	1·1	2·3	2·8	2·2	2·3	73
74	2·9	2·1	1·8	1·6	1·0	1·1	1·1	1·6	1·8	1·7	2·3	3·3	74
75	2·1	1·5	2·0	1·6	1·5	1·6	1·5	1·2	1·6	2·2	2·6	1·9	75
76	3·6	2·4	3·3	1·7	1·0	1·4	2·2	1·6	1·1	1·8	3·0	2·3	76
77	2·9	2·0	2·0	1·9	1·3	1·6	1·1	1·6	1·3	2·3	1·9	2·6	77
78	2·9	1·8	1·6	1·5	1·3	1·2	1·6	1·2	1·9	1·9	2·0	3·2	78
79	3·2	2·2	2·0	1·7	1·4	1·3	0·7	1·0	1·3	2·4	2·1	3·3	79
80	2·2	1·7	2·0	1·6	1·4	1·2	1·2	1·2	1·0	1·9	2·7	2·7	80
81	2·2	2·4	2·3	1·9	1·5	1·3	1·4	1·7	1·3	2·4	1·8	2·6	81
82	2·5	2·3	2·3	1·9	1·7	1·4	0·9	1·3	1·5	1·4	2·0	2·7	82
1883	2·5	2·4	1·9	1·7	2·2	1·6	0·9	1·3	1·1	1·9	2·2	3·0	1883
Sums ..	38·9	31·4	31·7	26·3	23·1	20·3	19·6	21·4	23·8	31·7	35·0	41·2	} 15 years.
Means ..	2·6	2·1	2·1	1·8	1·5	1·4	1·3	1·4	1·6	2·1	2·3	2·7	
Frequency.													
0° — 0°·9	8·1	8·0	9·4	10·5	11·9	12·8	14·6	13·0	11·8	9·3	8·4	8·1	0° — 0°·9
1·0— 4·9	18·5	18·3	19·3	18·5	18·6	17·0	15·3	17·5	17·4	19·1	18·9	18·1	1·0— 4·9
5·0— 9·9	4·2	1·8	2·3	1·0	0·5	0·2	0·5	0·5	0·8	2·5	2·8	4·7	5·0— 9·9
10·0—14·9	0·1	..	..	..	..	..	..	0·1	..	..	..	0·1	10·0—14·9
15·0—19·9	..	..	..	..	..	..	..	..	..	..	..	0·1	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

Table III—*continued.*

ARMAGH.—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	2·7	2·9	2·1	3·1	1·7	2·4	2·8	2·3	2·3	3·1	4·1	3·2	1869
70	2·6	2·6	3·1	2·4	2·1	2·3	2·5	1·8	2·2	2·9	2·6	4·2	70
71	2·3	2·3	3·3	2·2	2·7	1·9	2·0	2·0	2·9	2·6	2·5	3·5	71
72	3·6	2·0	2·7	2·2	2·4	2·3	2·4	1·9	2·6	3·5	2·6	3·2	72
73	3·0	3·2	2·2	2·2	2·4	1·5	1·9	2·1	3·0	3·3	2·8	4·0	73
74	3·5	3·1	2·9	2·1	1·8	1·9	1·7	1·9	2·1	2·6	3·2	3·1	74
75	3·1	2·7	2·3	2·2	2·4	2·1	1·9	1·4	1·7	2·5	3·1	2·0	75
76	3·9	2·8	3·2	2·9	1·6	2·3	2·5	1·9	1·7	1·8	2·7	2·6	76
77	3·1	3·6	2·9	2·2	1·6	2·1	2·0	1·9	1·9	2·9	2·4	3·5	77
78	3·2	1·9	2·1	2·0	2·0	1·7	2·0	1·7	2·7	2·5	2·7	3·8	78
79	3·1	2·2	2·4	2·1	2·0	1·3	1·6	2·0	2·0	2·9	2·5	4·3	79
80	3·0	1·8	2·4	1·6	2·0	2·0	1·6	2·1	1·9	2·5	3·9	3·3	80
81	3·0	3·0	2·8	2·0	1·9	1·7	2·4	1·6	1·5	2·9	3·3	3·5	81
82	2·9	2·7	3·3	2·0	1·7	1·4	1·3	1·5	2·0	2·6	3·3	3·4	82
1883	3·0	3·4	2·4	1·7	2·3	1·6	1·0	1·5	1·9	2·4	2·8	3·7	1883
Sums ..	46·0	40·2	40·1	32·9	30·6	28·5	29·6	27·6	32·4	41·0	44·5	51·3	} 15 years.
Means ..	3·1	2·7	2·7	2·2	2·0	1·9	2·0	1·8	2·2	2·7	3·0	3·4	
Frequency.													
0° — 0°·9	6·3	7·8	7·7	8·4	8·4	9·7	10·9	10·4	9·0	7·7	6·1	5·9	0° — 0°·9
1·0— 4·9	18·5	16·0	18·5	19·2	21·1	19·1	18·0	19·3	18·5	17·8	18·5	17·1	1·0— 4·9
5·0— 9·9	5·8	4·2	4·6	2·4	1·5	1·2	2·0	1·2	2·3	5·1	4·9	7·5	5·0— 9·9
10·0—14·9	0·5	0·2	0·2	..	..	..	0·1	0·1	0·1	0·3	0·6	0·6	10·0—14·9
15·0—19·9	..	..	..	..	..	..	..	..	..	..	..	..	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

Table III—*continued.*

GLASGOW.—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	2·9	3·7	2·5	3·1	1·9	2·5	2·9	1·9	2·9	3·2	4·4	3·6	1869
70	2·2	3·1	2·9	2·2	1·8	2·4	2·4	1·7	2·3	2·8	3·1	4·2	70
71	2·2	2·4	3·7	2·4	3·3	2.2	1·6	2·0	1·8	3·3	3·2	3·7	71
72	2·6	2·3	2·4	1·9	1·9	2·5	2·8	1·9	2·0	2·3	3·0	3·0	72
73	2·8	3·1	1·8	1·9	1·9	1·8	2·5	2·1	2·2	3·1	2·8	3·9	73
74	3·4	2·8	2·5	2·7	1·7	1·9	1·7	1·7	2·1	2·9	3·1	3·5	74
75	4·1	2·2	2·3	2·0	1·5	1·5	2·1	1·4	2·2	2·0	2·6	3·0	75
76	3·7	2·7	2·8	2·9	1·7	2·7	2·6	1·8	2·0	1·8	3·2	2·3	76
77	3·6	3·1	2·3	2·0	1·4	1·6	1·7	1·6	2·3	3·6	2·1	3·1	77
78	2·9	2·5	2·3	1·7	2·0	1·9	1·5	1·8	2·5	2·6	2·4	3·7	78
79	3·3	2·7	2·6	1·8	2·0	1·8	1·8	1·9	1·8	3·4	2·9	3·8	79
80	2·5	2·1	2·3	1·7	1·9	1·5	1·8	1·6	2·6	3·1	5·4	2·7	80
81	3·5	2·5	3·0	2·3	2·1	1·8	1·8	1·4	1·4	2·3	3·3	3·6	81
82	2·9	2·6	2·9	1·8	1·7	1·6	1·3	1·8	2·1	2·7	2·3	3·3	82
1883	2·8	3·0	2·4	1·6	1·9	1·8	1·5	1·4	1·9	2·3	2·4	3·2	1883
Sums ..	45·4	40·8	38·7	32·0	28·7	29·5	30·0	26·0	32·1	41·4	46·2	50·6	} 15 years.
Means ..	3·0	2·7	2·6	2·1	1·9	2·0	2·0	1·7	2·1	2·8	3·1	3·4	
Frequency.													
0° — 0°·9	6·1	6·5	7·3	10·1	10·3	9·9	9·9	10·7	8·4	7·9	6·9	6·1	0° — 0°·9
1·0— 4·9	19·1	17·0	19·3	17·5	18·9	18·4	19·2	19·3	19·5	18·0	17·1	17·1	1·0— 4·9
5·0— 9·9	5·1	4·6	4·2	2·4	1·8	1·6	1·8	1·0	2·1	4·5	5·2	6·9	5·0— 9·9
10·0—14·9	0·7	..	0·2	0·1	..	0·1	0·1	0·1	..	0·5	0·7	0·9	10·0—14·9
15·0—19·9	..	..	..	..	..	..	..	..	..	..	..	..	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

Table III—*continued.*

ABERDEEN—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	2·4	3·5	2·1	3·1	2·1	2·9	2·6	2·4	2·2	3·6	3·3	3·6	1869
70	2·3	2·3	3·0	3·0	2·2	3·0	2·0	1·6	2·1	2·6	3·0	3·8	70
71	2·5	2·6	3·6	2·1	3·0	2·0	1·6	2·0	1·8	2·7	2·7	2·9	71
72	2·6	1·6	2·3	2·2	2·4	1·3	2·5	1·6	2·4	2·7	3·1	2·7	72
73	2·6	3·5	1·7	2·0	2·4	2·3	1·8	1·5	2·0	3·0	2·2	4·1	73
74	3·6	2·4	3·1	2·5	1·4	2·0	2·3	2·2	2·5	2·9	2·9	3·2	74
75	3·5	2·3	1·9	2·8	2·6	2·2	1·6	1·8	2·2	2·1	2·5	2·4	75
76	3·5	2·7	2·2	2·7	2·3	2·3	2·5	2·0	1·7	2·0	3·1	2·4	76
77	3·2	3·1	2·0	1·5	1·4	1·9	1·8	1·9	2·3	3·5	2·3	3·1	77
78	2·9	2·8	2·7	1·4	2·1	1·9	2·4	1·5	2·4	2·4	2·2	2·5	78
79	2·5	2·6	2·4	1·4	2·9	1·4	1·7	2·0	1·7	3·1	2·9	3·3	79
80	2·4	2·3	2·2	1·9	2·2	2·2	1·4	1·4	2·6	3·1	4·3	3·8	80
81	4·3	2·0	3·2	1·8	3·1	2·0	2·8	1·5	1·3	1·8	3·0	3·3	81
82	3·0	2·5	3·6	2·1	1·9	1·6	1·7	2·3	2·4	1·8	2·3	3·7	82
1883	2·7	2·6	2·0	1·6	2·6	1·9	1·7	2·0	2·2	2·7	2·2	3·0	1883
Sums ..	44·0	38·8	38·0	32·1	34·6	30·9	30·4	27·7	31·8	40·0	42·0	47·8	15 years.
Means ..	2·9	2·6	2·5	2·1	2·3	2·1	2·0	1·8	2·1	2·7	2·8	3·2	
Frequency.													
0° — 0°·9	7·0	6·7	9·1	9·9	8·1	9·4	10·5	10·5	9·1	8·1	6·9	6·6	0° — 0°·9
1·0— 4·9	18·5	17·5	17·6	17·6	19·6	18·0	18·1	18·9	19·3	18·3	18·5	17·7	1·0— 4·9
5·0— 9·9	4·9	3·9	3·7	2·3	3·2	2·5	2·4	1·6	1·6	4·0	4·1	6·2	5·0— 9·9
10·0—14.9	0·6	0·1	0·4	0·2	..	0·1	..	..	..	0·5	0·5	0·5	10·0—14·9
15·0—19·9	..	..	..	..	0·1	..	..	..	..	0·1	..	..	15·0—19·9
20 0—24·9	..	..	..	..	..	..	..	..	..	..	..	0·1	20·0—24·9

Table III—*continued.*

FALMOUTH—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	1·9	2·0	2·0	1·9	1·9	1·2	1·5	2·1	1·4	1·9	3·9	2·9	1869
70	2·5	2·6	2·5	1·7	1·5	1·4	1·5	1·5	1·5	2·4	2·2	3·6	70
71	2·4	2·0	2·0	1·3	2·1	1·6	1·2	1·4	1·6	1·7	3·0	2·6	71
72	2·4	1·8	2·3	1·7	1·6	1·3	1·3	1·2	1·9	2·1	1·9	2·0	72
73	2·7	2·3	1·7	1·6	1·5	1·2	1·3	1·4	1·9	2·2	2·0	2·2	73
74	2·8	1·7	1·8	1·7	1·3	1·4	1·0	1·4	1·5	1·7	2·6	3·0	74
75	2·1	2·7	2·3	1·8	1·3	1·3	1·6	1·1	1·7	2·1	2·6	1·9	75
76	2·9	1·7	3·1	1·5	1·4	1·8	1·8	1·6	1·3	1·5	3·1	2·0	76
77	2·4	2·1	2·2	1·8	1·0	1·3	1·3	1·4	1·4	2·1	2·3	2·1	77
78	2·4	1·6	2·2	1·8	0·9	1·4	1·3	1·1	1·9	1·5	2·5	3·1	78
79	3·1	2·4	2·5	1·6	2·1	0·9	1·3	1·2	1·4	2·6	2·6	2·7	79
80	2·2	1·6	1·4	1·6	1·8	1·3	1·0	1·3	1·5	2·6	2·5	2·6	80
81	2·9	2·3	2·1	1·8	1·4	1·8	1·7	1·7	1·3	2·2	1·7	2·6	81
82	2·5	2·0	1·7	1·5	1·3	1·1	1·0	1·3	1·5	1·7	2·0	2·0	82
1883	2·3	2·5	2·2	1·4	1·8	1·9	1·0	1·3	1·3	1·6	1·9	2·6	1883
Sums ..	37·5	31·3	32·0	24·7	22·9	20·9	19·8	21·0	23·1	29·9	36·8	37·9	} 15 years.
Means ..	2·5	2·1	2·1	1·6	1·5	1·4	1·3	1·4	1·5	2·0	2·5	2·5	
Frequency.													
0° — 0°·9	7·6	8·7	9·3	11·9	11·5	13·1	13·7	12·1	11·5	10·3	7·4	8·0	0° — 0°·9
1·0— 4·9	20·0	17·3	19·3	17·3	19·0	16·3	17·0	18·6	18·3	18·4	19·0	19·3	1·0— 4·9
5·0— 9·9	3·1	2·1	2·3	0·7	0·5	0·5	0·3	0·3	0·1	2·3	3·5	3·7	5·0— 9·9
10·0—14·6	0·3	..	..	0·1	..	..	..	..	..	..	0·1	..	10·0—14·9
15·0—19·9	..	..	..	..	..	..	..	..	..	..	..	..	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

Table III—*continued.*

STONYHURST—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	3·2	2·8	1·9	3·7	2·0	2·4	3·0	2·6	2·7	3·5	4·2	3·4	1869
70	2·4	3·1	2·5	2·7	2·3	2·6	2·8	2·0	2·3	2·7	2·5	4·4	70
71	3·3	3·3	3·6	2·5	3·2	2·5	1·8	2·7	2·3	2·7	2·7	2·8	71
72	2·6	2·6	3·2	2·0	1·8	2·6	2·8	2·0	2·4	2·2	2·5	2·5	72
73	3·1	3·0	2·0	2·3	1·8	2·7	3·0	2·8	3·1	3·8	2·7	3·5	73
74	3·1	2·9	2·9	2·6	2·0	1·6	1·9	2·1	1·9	2·5	3·2	3·9	74
75	3·6	2·5	2·5	1·7	2·5	2·0	2·3	1·6	2·0	2·4	3·0	2·3	75
76	3·6	2·9	2·9	2·7	1·8	2·5	2·7	2·4	1·7	2·2	2·7	2·5	76
77	3·0	3·0	2·3	1·8	1·7	2·3	1·7	2·1	2·0	2·8	2·5	2·8	77
78	2·7	2·4	2·7	1·9	2·4	2·4	1·9	1·3	2·4	2·0	2·3	3·8	78
79	3·2	1·8	2·9	1·8	2·3	1·7	1·9	1·8	2·0	3·1	3·0	3·2	79
80	2·8	2·6	2·1	1·9	1·8	2·3	1·6	1·7	2·4	2·8	4·1	2·8	80
81	3·7	2·7	2·8	2·2	2·1	1·7	2·3	1·6	1·6	2·5	2·9	3·2	81
82	2·5	2·4	2·7	2·3	2·4	1·7	1·5	1·7	1·8	2·8	2·5	3·7	82
1883	2·8	2·6	2·2	1·8	2·3	2·5	1·4	1·6	1·6	2·6	2·1	3·2	1883
Sums ..	45·6	40·6	39·2	33·9	32·4	33·5	32·6	30·0	32·2	40·6	42·9	48·0	} 15 years.
Means ..	3·0	2·7	2·6	2·3	2·2	2·2	2·2	2·0	2·1	2·7	2·9	3·2	
Frequency.													
0° — 0°·9	5·7	6·6	8·3	8·6	7·9	8·3	9·7	10·1	8·0	8·2	7·1	6·1	0° — 0°·9
1·0— 4·9	19·5	17·2	18·7	18·1	20·5	18·9	19·1	19·0	20·1	18·1	17·9	18·5	1·0— 4·9
5·0— 9·9	5·5	4·0	3·8	3·1	2·5	2·9	2·1	1·9	1·7	4·4	4·8	5·6	5·0— 9·9
10·0—14·9	0·3	0·4	0·3	0·2	0·1	..	0·1	..	0·1	0·3	0·2	0·8	10·0—14·9
15·0—19·9	..	..	..	..	..	..	..	0·1	..	..	0·1	..	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

Table III—*continued.*

KEW—*Variability.*

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1869	3·2	3·5	2·2	3·3	2·9	2·7	3·4	3·0	3·1	3·8	4·7	3·2	1869
70	3·2	2·8	3·7	3·0	3·4	3·3	2·9	2·0	3·1	3·7	3·1	3·7	70
71	2·7	3·4	3·4	2·1	3·0	1·9	1·8	2·4	2·4	3·0	2·6	2·3	71
72	2·7	2·9	2·8	3·3	2·7	2·8	3·3	2·1	3·6	3·0	2·6	2·5	72
73	2·3	2·7	2·6	2·7	2·3	2·4	2·6	2·3	2·4	4 0	2·8	3·8	73
74	4·4	3·8	3·1	2·4	1 9	2·5	2·5	2·3	2·3	2·9	4·1	3·6	74
75	3·3	2·6	2·7	2·3	2·4	2·2	2·0	1·7	2·3	2·7	3·4	2·1	75
76	4·5	2·8	3·7	2·4	1·6	2·4	2·4	2·8	1·9	2·4	3·0	2·5	76
77	3·9	3·1	2·7	1·9	2·1	2·5	2·2	2·7	2·0	3·4	3·7	3·7	77
78	3·5	2·5	2·5	1·5	2 2	2·2	1·7	1·4	2·4	2·4	2·9	2·7	78
79	2·9	2·7	3·2	2·3	2·6	1·2	1·6	2·1	1·8	3·4	3·3	4·3	79
80	2·9	2·8	2·7	2·0	2·9	2·1	1·2	1·9	2·3	3·9	4·3	4·5	80
81	3·1	3·3	3·0	2·7	2·6	2·1	3·3	2·1	1·9	2·8	3·1	2·8	81
82	3·3	3·3	2·7	2·0	2·3	1·9	1·6	1·9	2·0	2·7	3·2	3·9	82
1883	3·2	3·3	2·5	2·6	2·9	2·9	1·9	2 3	2·0	2·3	3·4	2·9	1883
Sums ..	49·1	45·5	43·5	36·5	37·8	35·1	34·4	33·0	35·5	46·4	50·2	48·5	15 years.
Means ..	3·3	3·0	2·9	2·4	2·5	2·3	2·3	2·2	2·4	3·1	3·3	3·2	
Frequency.													
0° — 0°·9	6·3	5·3	6·5	8·1	8·3	8·8	8·2	7·9	7·3	6·5	5·9	6·8	0° — 0°·9
1·0— 4·9	17·4	17·6	19·5	18·6	18·5	18·1	19·6	20·9	19·9	18·3	16·9	17·5	1·0— 4·9
5·0— 9·9	6·5	5·1	4·6	3·1	4·1	3·1	3·1	2·1	2·8	5·7	6·4	5·7	5·0— 9·9
10·0—14·9	0·7	0·2	0·3	0·2	0·1	0·1	0·1	0·1	0·1	0·5	0·8	1·0	10·0—14·9
15·0—19·9	..	0·1	..	..	..	..	..	..	..	..	..	0·1	15·0—19·9
20·0—24·9	..	..	..	..	..	..	..	..	..	..	..	..	20·0—24·9

When dealing with the daily mean values for the observatories, it seemed worth while to append to the paper a notice of the distribution of these mean values. They have been arranged in seven columns according to their heights, 10°·0—19°·9, 20°·0—31°·9, 32°·0—39°·9, 40°·0—49°·9, 50°·0—59°·9, 60°·0—69°·9, 70°·0—79°·9. These intervals are naturally unequal, the exigencies of the Fahrenheit scale not suiting the decimal division about the freezing point.

These figures are given in detail for the different years in Table IV, in order to give a general idea of the character of each year.

Taking the winters, we see that Stonyhurst had in the severe winter of 1881 four days in January on which the mean temperature did not reach 20°, and had 19 days in all in that month in which the mean temperature did not rise to the freezing point.

In the same month the number of days with a mean below 32° was higher (21) than at Stonyhurst both at Aberdeen and Glasgow, but the cold was not so intense at these stations as at Stonyhurst, for the number of days with a mean below 20°·0 was less.

Neither at Falmouth nor at Valencia did the mean ever fall below 20°·0.

Conversely, as regards higher temperatures, Kew far outstrips the other stations, July showing in the interval of 15 years 35 days on which the mean temperature amounted to 70°·0 or upwards.

Table IV.—Number of occasions in each Month and each Year on which the Mean Daily Temperature reached definite limits.

VALENCIA.

January.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·0.
1869	..	..	..	24	7	..	..
70	..	..	5	24	2	..	..
71	..	..	5	26	..	..	..
72	..	..	1	26	4	..	..
73	..	..	2	26	3	..	..
74	..	..	1	26	4	..	..
75	..	..	..	17	14	..	..
76	..	..	8	12	11	..	..
77	..	..	1	30	..	..	..
78	..	..	2	21	8	..	..
79	..	..	13	18	..	..	..
80	..	..	7	23	1	..	..
81	..	5	13	13	..	..	..
82	..	..	..	22	9	..	..
1883	..	..	2	26	3	..	..
Sums	..	5	60	334	66	..	..

Table IV—*continued.*

VALENCIA—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	18	10	..	..
70	..	..	11	17	..	..	..
71	..	..	..	23	5	..	..
72	..	..	..	27	2	..	..
73	..	1	7	20	..	..	..
74	..	..	..	26	2	..	..
75	..	..	9	17	2	..	..
76	..	..	3	20	6	..	..
77	..	..	..	20	8	..	..
78	..	..	2	19	7	..	..
79	..	..	7	21	..	..	..
80	..	..	..	27	2	..	..
81	..	..	7	21	..	..	..
82	..	..	..	24	4	..	..
1883	..	..	1	25	2	..	..
Sums	..	1	47	325	50	..	..

March.

1869	..	..	2	28	1	..	..
70	..	..	3	22	6	..	..
71	..	..	1	21	9	..	..
72	..	..	3	17	11	..	..
73	..	..	2	28	1	..	..
74	..	..	3	17	11	..	..
75	..	..	4	26	1	..	..
76	..	..	3	26	2	..	..
77	..	..	..	29	2	..	..
78	..	..	..	20	11	..	..
79	..	..	3	27	1	..	..
80	..	..	..	25	6	..	..
81	..	..	3	23	5	..	..
82	..	..	..	21	10	..	..
1883	..	..	8	23	..	..	..
Sums	..	..	35	353	77	..	..

Table IV—*continued.*

VALENCIA—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	9	19	2	..
70	..	..	..	19	11	..	..
71	..	..	..	11	19	..	..
72	..	..	..	20	10	..	..
73	..	..	..	12	18	..	..
74	..	..	..	14	16	..	..
75	..	..	..	15	15	..	..
76	..	..	1	14	15	..	..
77	..	..	..	21	9	..	..
78	..	..	..	10	20	..	..
79	..	..	1	27	2	..	..
80	..	..	..	22	8	..	..
81	..	..	..	13	17	..	..
82	..	..	..	18	12	..	..
1883	..	..	..	26	4	..	..
Sums	..	..	2	251	195	2	..

May.

1869	..	..	..	12	19	..	..
70	..	..	..	6	25	..	..
71	..	..	..	3	24	4	..
72	..	..	..	15	16	..	..
73	..	..	..	7	24	..	..
74	..	..	..	6	25	..	..
75	..	..	..	1	30	..	..
76	..	..	..	5	26	..	..
77	..	..	..	9	22	..	..
78	..	..	..	1	30	..	..
79	..	..	..	13	18	..	..
80	..	..	..	6	24	1	..
81	..	..	..	10	21	..	..
82	..	..	..	6	25	..	..
1883	..	..	..	8	23	..	..
Sums	..	..	..	108	352	5	..

Table IV—*continued.*

VALENCIA—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	..	24	6	..
70	..	..	..	..	24	6	..
71	..	..	..	..	29	1	..
72	..	..	..	2	27	1	..
73	..	..	..	..	29	1	..
74	..	..	..	..	25	5	..
75	..	..	..	..	29	1	..
76	..	..	..	..	30	..	..
77	..	..	..	..	23	7	..
78	..	..	..	..	28	2	..
79	..	..	..	..	30	..	..
80	..	..	..	..	27	3	..
81	..	..	..	1	28	1	..
82	..	..	..	..	28	2	..
1883	..	..	..	..	26	4	..
Sums	..	..	..	3	407	40	..

July.

1869	..	..	..	..	8	23	..
70	..	..	..	..	14	17	..
71	..	..	..	..	24	7	..
72	..	..	..	..	15	16	..
73	..	..	..	..	25	6	..
74	..	..	..	..	19	12	..
75	..	..	..	..	24	7	..
76	..	..	..	..	20	11	..
77	..	..	..	..	28	3	..
78	..	..	..	..	6	25	..
79	..	..	..	..	31	..	..
80	..	..	..	..	23	8	..
81	..	..	..	..	25	6	..
82	..	..	..	..	31	..	..
1883	..	..	..	..	31	..	..
Sums	..	..	..	..	324	141	..

Table IV—*continued.*

VALENCIA—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79° 9.
1869	..	..	..	..	20	10	1
70	..	..	..	..	5	26	..
71	..	..	..	..	13	18	..
72	..	..	..	..	20	11	..
73	..	..	..	..	24	7	..
74	..	..	..	..	21	10	..
75	..	..	..	..	11	20	..
76	..	..	..	..	18	13	..
77	..	..	..	..	22	9	..
78	..	..	..	..	7	24	..
79	..	..	..	..	29	2	..
80	..	..	..	..	5	26	..
81	..	..	..	..	29	2	..
82	..	..	..	..	23	8	..
1883	..	..	..	..	28	3	..
Sums	..	..	..	..	275	189	1

September.

1869	..	..	..	..	25	5	..
70	..	..	..	..	22	8	..
71	..	..	..	2	24	4	..
72	..	..	..	1	19	10	..
73	..	..	..	1	28	1	..
74	..	..	..	1	29	..	..
75	..	..	..	..	14	16	..
76	..	..	..	..	30	..	..
77	..	..	..	..	30	..	..
78	..	..	..	..	18	12	..
79	..	..	..	..	30	..	..
80	..	..	..	..	17	13	..
81	..	..	..	..	30	..	..
82	..	..	..	1	29	..	..
1883	..	..	..	..	30	..	..
Sums	..	..	..	6	375	69	..

Table IV—*continued.*

VALENCIA—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	6	19	6	..
70	..	..	..	7	21	3	..
71	..	..	..	4	27	..	..
72	..	..	..	19	12	..	..
73	..	..	..	14	17	..	..
74	..	..	..	4	27	..	..
75	..	..	..	11	20	..	..
76	..	..	..	3	28	..	..
77	..	..	..	4	27	..	..
78	..	..	..	10	19	2	..
79	..	..	..	12	19	..	..
80	..	..	..	25	6	..	..
81	..	..	..	9	22	..	..
82	..	..	..	8	23	..	..
1883	..	..	..	6	25	..	..
Sums	..	..	..	142	312	11	..

November.

1869	..	..	..	13	17	..	..
70	..	..	..	25	5	..	..
71	..	..	3	19	8	..	..
72	..	..	3	21	6	..	..
73	..	..	..	23	7	..	..
74	..	..	..	18	12	..	..
75	..	..	6	13	11	..	..
76	..	..	..	14	16	..	..
77	..	..	..	21	9	..	..
78	..	..	5	25	..	..	..
79	..	..	4	18	8	..	..
80	..	..	3	14	13	..	..
81	..	..	..	10	20	..	..
82	..	..	..	21	9	..	..
1883	..	..	..	21	9	..	..
Sums	..	..	24	276	150	..	..

Table IV—*continued.*

VALENCIA—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	1	5	24	1	..	..
70	..	..	14	16	1	..	..
71	..	..	6	22	3	..	..
72	..	..	1	26	4	..	..
73	..	..	..	15	16	..	..
74	..	..	4	27	..	..	..
75	..	..	10	13	8	..	..
76	..	..	1	23	7	..	..
77	..	..	..	27	4	..	..
78	..	2	16	11	2	..	..
79	..	..	7	19	5	..	..
80	..	..	4	14	13	..	..
81	..	..	3	25	3	..	..
82	..	..	9	16	6	..	..
1883	..	..	3	23	5	..	..
Sums	..	3	83	301	78	..	..

ARMAGH.

January.

1869	..	..	6	25	..	..	..
70	..	1	14	16	..	..	..
71	..	1	26	4	..	..	..
72	..	1	14	15	1	..	..
73	..	1	13	16	1	..	..
74	..	..	9	22	..	..	..
75	..	..	4	27	..	..	..
76	..	2	11	16	2	..	..
77	..	..	11	20	..	..	..
78	..	..	14	17	..	..	..
79	..	12	16	3	..	..	..
80	..	5	13	12	1	..	..
81	..	19	5	7	..	..	..
82	..	..	9	20	2	..	..
1883	..	..	10	20	1	..	..
Sums	..	42	175	240	8	..	..

Table IV—*continued.*

ARMAGH—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	2	22	4	..	..
70	..	5	11	12	..	..	..
71	..	..	3	24	1	..	..
72	..	..	1	28	..	..	..
73	..	4	15	9	..	..	..
74	..	1	9	18	..	..	..
75	..	..	18	9	1	..	..
76	..	2	12	15	..	..	..
77	..	..	9	18	1	..	..
78	..	..	4	24	..	..	..
79	..	..	19	9	..	..	..
80	..	..	6	23	..	..	..
81	..	1	13	14	..	..	..
82	..	..	1	25	2	..	..
1883	..	..	9	19	..	..	..
Sums	..	13	132	269	9	..	..

March.

1869	..	..	17	14	..	..	..
70	..	1	13	12	5	..	..
71	..	..	8	18	5	..	..
72	..	..	8	18	5	..	..
73	..	..	15	13	3	..	..
74	..	2	1	25	3	..	..
75	..	..	11	20	..	..	..
76	..	..	20	11	..	..	..
77	..	..	14	16	1	..	..
78	..	..	14	17	..	..	..
79	..	..	15	16	..	..	..
80	..	..	3	26	2	..	..
81	..	..	14	13	4	..	..
82	..	..	2	27	2	..	..
1883	..	..	25	6	..	..	..
Sums	..	3	180	252	30	..	..

Table IV—*continued.*

ARMAGH—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	2	18	10	..	..
70	..	..	..	21	9	..	..
71	..	..	..	25	5	..	..
72	..	..	2	22	6	..	..
73	..	..	..	24	6	..	..
74	..	..	..	17	11	2	..
75	..	..	1	21	8	..	..
76	..	..	5	18	7	..	..
77	..	..	..	30	..	..	..
78	..	..	4	14	12	..	..
79	..	..	6	24	..	..	..
80	..	..	..	27	3	..	..
81	..	..	9	17	4	..	..
82	..	..	1	25	4	..	..
1883	..	..	..	29	1	..	..
Sums	..	..	30	332	86	2	..

May.

1869	..	..	..	26	5	..	..
70	..	..	..	11	19	1	..
71	..	..	..	10	21	..	..
72	..	..	..	20	11	..	..
73	..	..	..	16	15	..	..
74	..	..	..	17	14	..	..
75	..	..	..	5	25	1	..
76	..	..	..	16	15	..	..
77	..	..	..	20	11	..	..
78	..	..	..	10	21	..	..
79	..	..	1	23	7	..	..
80	..	..	..	13	18	..	..
81	..	..	..	9	21	1	..
82	..	..	..	14	17	..	..
1883	..	..	1	11	19	..	..
Sums	..	..	2	221	239	3	..

Table IV—*continued.*

ARMAGH—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	4	23	3	..
70	..	..	..	..	25	5	..
71	..	..	..	..	28	2	..
72	..	..	..	6	20	4	..
73	..	..	..	..	26	4	..
74	..	..	..	..	28	2	..
75	..	..	..	..	29	1	..
76	..	..	..	2	24	4	..
77	..	..	..	1	22	7	..
78	..	..	..	..	23	7	..
79	..	..	..	4	26	..	..
80	..	..	..	5	22	3	..
81	..	..	..	5	23	2	..
82	..	..	..	3	26	1	..
1883	..	..	..	2	28	..	..
Sums	..	..	..	32	373	45	..

July.

1869	..	..	..	..	12	19	..
70	..	..	..	..	15	16	..
71	..	..	..	..	27	4	..
72	..	..	..	..	14	17	..
73	..	..	..	..	23	8	..
74	..	..	..	..	19	12	..
75	..	..	..	..	28	3	..
76	..	..	..	..	22	9	..
77	..	..	..	1	28	2	..
78	..	..	..	..	19	12	..
79	..	..	..	..	29	2	..
80	..	..	..	..	30	1	..
81	..	..	..	..	22	9	..
82	..	..	..	..	28	3	..
1883	..	..	..	..	31	..	..
Sums	..	..	..	1	347	117	..

Table IV—*continued.*

ARMAGH—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	1	22	8	..
70	..	..	..	..	16	15	..
71	..	..	..	..	18	13	..
72	..	..	..	..	22	9	..
73	..	..	..	..	27	4	..
74	..	..	..	..	22	9	..
75	..	..	..	..	20	11	..
76	..	..	..	..	19	12	..
77	..	..	..	..	25	6	..
78	..	..	..	..	16	15	..
79	..	..	..	2	26	3	..
80	..	..	..	..	14	17	..
81	..	..	..	..	27	4	..
82	..	..	..	..	22	9	..
1883	..	..	..	..	29	2	..
Sums	..	..	..	3	325	137	..

September.

1869	..	..	..	2	26	2	..
70	..	..	..	..	30	..	..
71	..	..	..	11	18	1	..
72	..	..	..	10	14	6	..
73	..	..	..	22	8	..	..
74	..	..	..	4	26	..	..
75	..	..	..	..	26	4	..
76	..	..	..	4	26	..	..
77	..	..	..	8	22	..	..
78	..	..	..	5	21	4	..
79	..	..	..	5	25	..	..
80	..	..	..	2	23	5	..
81	..	..	..	2	28	..	..
82	..	..	..	9	21	..	..
1883	..	..	..	2	28	..	..
Sums	..	..	..	86	342	22	..

Table IV—*continued.*

ARMAGH—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	4	11	13	3	..
70	..	..	..	21	10	..	..
71	..	..	..	19	12	..	..
72	..	..	2	25	4	..	..
73	..	..	6	19	5	1	..
74	..	..	..	21	10	..	..
75	..	..	..	20	11	..	..
76	..	..	..	9	22	..	..
77	..	..	..	16	15	..	..
78	..	..	2	13	15	1	..
79	..	..	..	26	5	..	..
80	..	..	9	21	1	..	..
81	..	..	4	20	7	..	..
82	..	..	1	15	15	..	..
1883	..	..	..	22	9	..	..
Sums	..	..	28	278	154	5	..

November.

1869	..	..	10	14	6	..	..
70	..	..	15	15	..	..	..
71	..	..	15	15	..	..	..
72	..	..	11	17	2	..	..
73	..	..	8	20	2	..	..
74	..	..	4	23	3	..	..
75	..	..	17	8	5	..	..
76	..	..	8	19	3	..	..
77	..	..	6	23	1	..	..
78	..	2	22	6	..	..	..
79	..	..	10	17	3	..	..
80	..	2	10	15	3	..	..
81	..	..	..	19	11	..	..
82	..	..	18	11	1	..	..
1883	..	2	10	16	2	..	..
Sums	..	6	164	238	42	..	..

Table IV—*continued.*

ARMAGH—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	5	16	10	..	..	..
70	1	12	10	8	..	..	..
71	..	2	12	17	..	..	..
72	..	1	15	14	1	..	..
73	..	..	4	25	2	..	..
74	..	7	21	3	..	..	..
75	..	7	6	18	..	..	..
76	..	..	8	23	..	..	..
77	..	..	12	19	..	..	..
78	1	16	11	3	..	..	..
79	..	12	8	11	..	..	..
80	..	4	12	13	2	..	..
81	..	4	14	13	..	..	..
82	..	10	10	11	..	..	..
1883	..	1	10	20	..	..	..
Sums	2	81	169	208	5	..	..

GLASGOW.

January.

1869	..	..	9	22	..	..	..
70	..	1	21	9	..	..	..
71	..	7	21	3	..	..	..
72	..	..	13	17	1	..	..
73	..	2	12	17	..	..	..
74	..	..	10	21	..	..	..
75	..	1	11	19	..	..	..
76	..	2	11	18	..	..	..
77	..	3	19	9	..	..	..
78	..	2	15	14	..	..	..
79	..	17	13	1	..	..	..
80	..	7	12	11	1	..	..
81	3	18	7	3	..	..	..
82	..	..	7	24	..	..	..
1883	..	..	17	14	..	..	..
Sums	3	60	198	202	2	..	..

Table IV—*continued.*

GLASGOW—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	7	19	2	..	..
70	..	6	15	7	..	..	..
71	..	..	9	19	..	..	..
72	..	..	7	22	..	..	..
73	..	8	14	6	..	..	..
74	..	1	11	16	..	..	..
75	..	2	20	6	..	..	..
76	..	3	18	8	..	..	..
77	..	2	8	18	..	..	..
78	..	..	9	19	..	..	..
79	..	7	18	3	..	..	..
80	..	..	6	23	..	..	..
81	..	2	24	2	..	..	..
82	..	..	4	24	..	..	..
1882	..	..	9	19	..	..	..
Sums	..	31	179	211	2	..	..

March.

69	..	..	19	12	..	..	..
70	..	1	15	15	..	..	..
71	..	1	7	22	1	..	..
72	..	..	14	15	2	..	..
73	..	..	18	13	..	..	..
74	..	2	2	25	2	..	..
75	..	..	16	15	..	..	..
76	..	3	15	13	..	..	..
77	..	..	21	10	..	..	..
78	..	..	16	15	..	..	..
79	..	4	15	12	..	..	..
80	..	..	12	19	..	..	..
81	..	5	14	12	..	..	..
82	..	..	7	24	..	..	..
1883	..	..	26	5	..	..	..
Sums	..	16	217	227	5	..	..

Table IV—*continued.*

GLASGOW—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	3	19	8	..	..
70	..	..	..	24	6	..	..
71	..	..	4	25	1	..	..
72	..	..	3	22	5	..	..
73	..	..	2	25	3	..	..
74	..	..	..	20	10	..	..
75	..	..	1	22	7	..	..
76	..	..	7	18	5	..	..
77	..	..	7	23	..	..	..
78	..	..	2	20	8	..	..
79	..	..	11	19	..	..	..
80	..	..	..	29	1	..	..
81	..	..	10	18	2	..	..
82	..	..	2	26	2	..	..
1883	..	..	1	28	1	..	..
Sums	..	..	53	338	59	..	..

May.

1869	..	..	1	28	2	..	..
70	..	..	..	11	20	..	..
71	..	..	..	14	12	5	..
72	..	..	..	23	8	..	..
73	..	..	2	18	11	..	..
74	..	..	..	22	9	..	..
75	..	..	..	6	25	..	..
76	..	..	..	14	17	..	..
77	..	..	2	20	9	..	..
78	..	..	..	12	19	..	..
79	..	..	..	28	3	..	..
80	..	..	..	18	13	..	..
81	..	..	..	15	13	3	..
82	..	..	..	14	17	..	..
1883	..	..	1	14	16	..	..
Sums	..	..	6	257	194	8	..

Table IV—*continued.*

GLASGOW—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	6	20	4	..
70	..	..	..	2	24	4	..
71	..	..	..	2	28	..	..
72	..	..	..	4	22	4	..
73	..	..	..	..	29	1	..
74	..	..	..	..	30	..	..
75	..	..	..	..	30	..	..
76	..	..	..	..	24	6	..
77	..	..	..	1	29	..	..
78	..	..	..	2	21	5	2
79	..	..	..	5	25	..	..
80	..	..	..	5	23	2	..
81	..	..	..	5	23	2	..
82	..	..	..	3	26	1	..
1883	..	..	..	1	28	1	..
Sums	..	..	..	36	382	30	2

July

1869	..	..	..	..	17	14	..
70	..	..	..	..	19	10	2
71	..	..	..	..	27	4	..
72	..	..	..	..	16	15	..
73	..	..	..	..	27	3	1
74	..	..	..	..	21	10	..
75	..	..	..	..	25	6	..
76	..	..	..	..	25	6	..
77	..	..	..	..	30	1	..
78	..	..	..	..	18	13	..
79	..	..	..	..	29	2	..
80	..	..	..	..	27	4	..
81	..	..	..	..	30	1	..
82	..	..	..	..	27	4	..
1883	..	..	..	..	26	5	..
Sums	..	..	..	..	364	98	3

Table IV—*continued*

GLASGOW—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	2	23	6	..
70	..	..	..	1	16	14	..
71	..	..	..	..	21	10	..
72	..	..	..	..	29	2	..
73	..	..	..	..	30	1	..
74	..	..	..	..	29	2	..
75	..	..	..	..	26	5	..
76	..	..	..	..	22	9	..
77	..	..	..	2	25	4	..
78	..	..	..	..	24	7	..
79	..	..	..	1	27	3	..
80	..	..	..	..	18	13	..
81	..	..	..	4	26	1	..
82	..	..	..	..	26	5	..
1883	..	..	..	..	31	..	..
Sums	..	..	..	10	373	82	..

September.

1869	..	..	..	4	25	1	..
70	..	..	..	2	28	..	..
71	..	..	..	12	18	..	..
72	..	..	..	12	18	..	..
73	..	..	..	9	21	..	..
74	..	..	..	6	24	..	..
75	..	..	..	5	23	2	..
76	..	..	..	7	23	..	..
77	..	..	..	13	17	..	..
78	..	..	..	8	19	3	..
79	..	..	..	8	22	..	..
80	..	..	..	3	24	3	..
81	..	..	..	1	29	..	..
82	..	..	..	7	23	..	..
1883	..	..	..	3	27	..	..
Sums	..	..	..	100	341	9	..

Table IV—*continued.*

GLASGOW—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	6	11	13	1	..
70	..	..	..	27	4	..	..
71	..	..	2	19	10	..	..
72	..	..	2	26	3	..	..
73	..	..	5	21	5	..	..
74	..	..	1	26	4	..	..
75	..	..	1	23	7	..	..
76	..	..	1	14	16	..	..
77	..	..	2	18	11	..	..
78	..	..	2	11	18	..	..
79	..	..	4	22	5	..	..
80	..	..	9	20	2	..	..
81	..	..	5	19	7	..	..
82	..	..	2	14	15	..	..
1883	..	..	..	25	6	..	..
Sums	..	..	42	296	126	1	..

November.

1869	..	4	11	11	4	..	..
70	..	1	18	11	..	..	..
71	..	1	17	12	..	..	..
72	..	..	10	17	3	..	..
73	..	2	7	20	1	..	..
74	..	..	10	16	4	..	..
75	..	2	17	8	3	..	..
76	..	5	11	12	2	..	..
77	..	..	8	21	1	..	..
78	..	..	18	12	..	..	..
79	..	2	11	16	1	..	..
80	..	6	8	15	1	..	..
81	..	..	3	21	6	..	..
82	..	..	20	10	..	..	..
1883	..	2	14	12	2	..	..
Sums	..	25	183	214	28	..	..

Table IV—*continued.*

GLASGOW—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	8	16	7	..	..	..
70	2	7	17	5	..	..	..
71	..	3	14	14	..	..	..
72	..	3	15	13	..	..	..
73	..	..	7	24	..	..	..
74	1	14	14	2	..	..	..
75	..	4	7	20	..	..	..
76	..	1	8	22	..	..	..
77	..	2	9	20	..	..	..
78	1	14	14	2	..	..	..
79	1	8	11	11	..	..	..
80	..	5	13	12	1	..	..
81	..	2	16	13	..	..	..
82	..	11	11	9	..	..	..
1883	..	11	20	..	..	..	..
Sums	5	93	192	174	1	..	..

ABERDEEN.

January.

1869	..	..	11	20	..	..	..
70	..	1	24	6	..	..	..
71	..	7	22	2	..	..	..
72	..	..	15	16	..	..	..
73	..	..	15	16	..	..	..
74	..	..	12	19	..	..	..
75	..	2	12	17	..	..	..
76	..	5	9	17	..	..	..
77	..	2	19	10	..	..	..
78	..	3	20	8	..	..	..
79	..	10	20	1	..	..	..
80	..	2	18	11	..	..	..
81	1	20	8	2	..	..	..
82	..	..	11	20	..	..	..
1883	..	..	19	12	..	..	..
Sums	1	52	235	177	..	..	..

Table IV—*continued.*

ABERDEEN—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	1	9	16	2	..	..
70	..	7	14	7	..	..	..
71	..	..	10	17	1	..	..
72	..	..	9	20	..	..	..
73	..	5	19	4	..	..	..
74	..	1	13	14	..	..	..
75	..	2	20	6	..	..	..
76	..	3	22	4	..	..	..
77	..	3	13	12	..	..	..
78	..	..	10	18	..	..	..
79	..	6	19	3	..	..	..
80	..	..	7	22	..	..	..
81	..	3	24	1	..	..	..
82	..	2	9	17	..	..	..
1883	..	..	7	21	..	..	..
Sums	..	33	205	182	3	..	..

March.

1869	..	1	22	8	..	..	..
70	..	3	12	16	..	..	..
71	..	1	8	21	1	..	..
72	..	..	14	17	..	..	..
73	..	..	18	13	..	..	..
74	..	3	3	22	3	..	..
75	..	..	19	12	..	..	..
76	..	5	15	11	..	..	..
77	..	..	23	8	..	..	..
78	..	6	14	10	1	..	..
79	..	3	17	11	..	..	..
80	..	..	12	19	..	..	..
81	..	6	19	5	1	..	..
82	..	..	7	23	1	..	..
1883	..	8	19	4	..	..	..
Sums	..	36	222	200	7	..	..

Table IV—*continued.*

ABERDEEN—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	5	15	10	..	..
70	..	..	2	25	3	..	..
71	..	..	11	19	..	..	..
72	..	..	7	18	5	..	..
73	..	..	3	26	1	..	..
74	..	..	..	25	5	..	..
75	..	..	1	25	4	..	..
76	..	..	7	20	3	..	..
77	..	..	12	18	..	..	..
78	..	..	5	22	3	..	..
79	..	..	18	12	..	..	..
80	..	..	1	28	1	..	..
81	..	..	15	15	..	..	..
82	..	1	7	20	2	..	..
1883	..	..	..	30	..	..	..
Sums	..	1	94	318	37	..	..

May.

1869	..	..	1	29	1	..	..
70	..	..	1	13	17	..	..
71	..	..	1	16	14	..	..
72	..	..	..	23	8	..	..
73	..	..	2	26	3	..	..
74	..	..	1	25	5	..	..
75	..	..	..	15	15	1	..
76	..	..	1	22	8	..	..
77	..	..	5	24	2	..	..
78	..	..	..	20	11	..	..
79	..	..	4	25	2	..	..
80	..	..	..	20	11	..	..
81	..	..	1	15	15	..	..
82	..	..	..	24	7	..	..
1883	..	..	3	17	10	1	..
Sums	..	..	20	314	129	2	..

Table IV—*continued.*

ABERDEEN—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	10	18	2	..
70	..	..	..	3	24	3	..
71	..	..	..	15	15	..	..
72	..	..	..	2	27	1	..
73	..	..	..	..	28	2	..
74	..	..	..	4	25	1	..
75	..	..	..	2	27	1	..
76	..	..	..	2	27	1	..
77	..	..	..	4	26	..	..
78	..	..	..	12	13	5	..
79	..	..	..	15	15	..	..
80	..	..	..	6	23	1	..
81	..	..	..	13	17	..	..
82	..	..	..	8	22	..	..
1883	..	..	..	11	18	1	..
Sums	..	..	..	107	325	18	..

July.

1869	..	..	..	..	22	9	..
70	..	..	..	..	22	9	..
71	..	..	..	..	26	5	..
72	..	..	..	..	23	8	..
73	..	..	..	..	26	5	..
74	..	..	..	..	21	10	..
75	..	..	..	1	29	1	..
76	..	..	..	..	25	6	..
77	..	..	..	1	27	3	..
78	..	..	..	..	26	4	1
79	..	..	..	1	30	..	..
80	..	..	..	..	31	..	..
81	..	..	..	1	25	5	..
82	..	..	..	..	29	2	..
1883	..	..	..	..	27	4	..
Sums	..	..	..	4	389	71	1

Table IV—*continued.*

ABERDEEN—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	1	26	4	..
70	..	..	..	1	25	5	..
71	..	..	..	..	21	10	..
72	..	..	..	..	30	1	..
73	..	..	..	1	29	1	..
74	..	..	..	1	28	2	..
75	..	..	..	..	27	4	..
76	..	..	..	2	27	2	..
77	..	..	..	3	28	..	..
78	..	..	..	..	28	3	..
79	..	..	..	1	30	..	..
80	..	..	..	..	25	6	..
81	..	..	..	5	24	2	..
82	..	..	..	..	26	5	..
1883	..	..	..	..	29	2	..
Sums	..	..	..	15	403	47	..

September.

1869	..	..	..	4	25	1	..
70	..	..	..	2	28	..	..
71	..	..	..	14	14	2	..
72	..	..	..	13	17	..	..
73	..	..	..	9	21	..	..
74	..	..	..	6	24	..	..
75	..	..	..	6	24	..	..
76	..	..	..	11	19	..	..
77	..	..	..	16	14	..	..
78	..	..	..	20	7	3	..
79	..	..	..	6	24	..	..
80	..	..	..	2	24	4	..
81	..	..	..	4	26	..	..
82	..	..	..	6	24	..	..
1883	..	..	..	7	23	..	..
Sums	..	..	..	126	314	10	..

Table IV—*continued.*

ABERDEEN—*continued.*

October.

Year	10—19°·9.	20—31°·9.	32—39°·9.	40—49°·9.	50—59°·9.	60—69°·9.	70—79°·9.
1869	..	..	7	13	10	1	..
70	..	..	..	21	10	..	..
71	..	..	..	12	19	..	..
72	..	..	1	25	5	..	..
73	..	..	5	23	3	..	..
74	..	..	1	25	5	..	..
75	..	..	1	24	6	..	..
76	..	..	2	15	14	..	..
77	..	..	6	16	9	..	..
78	..	..	2	11	18	..	..
79	..	..	4	23	4	..	..
80	..	..	10	19	2	..	..
81	..	..	5	20	6	..	..
82	..	..	1	12	18	..	..
1883	..	..	..	25	6	..	..
Sums	..	..	45	284	135	1	..

November.

1869	..	3	15	9	3	..	..
70	..	..	18	12	..	..	..
71	..	..	19	11	..	..	..
72	..	..	8	20	2	..	..
73	..	..	8	22	..	..	..
74	..	..	14	16	..	..	..
75	..	1	17	11	1	..	..
76	..	1	9	20	..	..	..
77	..	..	10	19	1	..	..
78	..	..	18	12	..	..	..
79	..	1	12	17	..	..	..
80	..	4	10	16	..	..	..
81	..	..	3	23	4	..	..
82	..	..	17	13	..	..	..
1883	..	..	16	12	2	..	..
Sums	..	10	194	233	13	..	..

Table IV—*continued.*

ABERDEEN—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	6	19	6	..	..	..
70	..	10	16	5	..	..	..
71	..	3	17	11	..	..	..
72	..	3	12	16	..	..	..
73	..	..	11	20	..	..	..
74	..	12	18	1	..	..	..
75	..	..	16	15	..	..	..
76	..	..	12	19	..	..	..
77	..	4	13	14	..	..	..
78	..	18	11	2	..	..	..
79	..	10	13	8	..	..	..
80	1	8	13	9	..	..	..
81	..	4	15	12	..	..	..
82	2	6	14	9	..	..	..
1883	..	1	20	10	..	..	..
Sums	3	85	220	157	..	..	..

FALMOUTH.

January.

1869	..	..	..	24	7	..	..
70	..	..	8	21	2	..	..
71	..	1	16	14	..	..	..
72	..	..	..	27	4	..	..
73	..	..	4	23	4	..	..
74	..	..	..	27	4	..	..
75	..	..	..	18	13	..	..
76	..	2	9	19	1	..	..
77	..	..	..	25	6	..	..
78	..	..	5	24	2	..	..
79	..	5	12	14	..	..	..
80	..	..	13	17	1	..	..
81	..	8	10	13	..	..	..
82	..	..	2	24	5	..	..
1883	..	..	..	26	5	..	..
Sums	..	16	79	316	54	..	..

Table IV—*continued.*

FALMOUTH—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	17	11	..	..
70	..	4	8	16	..	..	..
71	..	..	1	23	4	..	..
72	..	..	..	25	4	..	..
73	..	..	11	17	..	..	..
74	..	..	1	27	..	..	..
75	..	1	8	17	2	..	..
76	..	..	6	17	6	..	..
77	..	..	1	18	9	..	..
78	..	..	2	23	3	..	..
79	..	..	9	18	1	..	..
80	..	..	..	27	2	..	..
81	..	..	8	18	2	..	..
82	..	..	..	24	4	..	..
1883	..	..	..	28	..	..	..
Sums	..	5	55	315	48	..	..

March.

1869	..	..	7	24	..	..	..
70	..	..	6	22	3	..	..
71	..	..	..	28	3	..	..
72	..	..	5	14	12	..	..
73	..	..	3	27	1	..	..
74	..	..	3	25	3	..	..
75	..	..	4	25	2	..	..
76	..	..	8	21	2	..	..
77	..	..	3	25	3	..	..
78	..	..	4	23	4	..	..
79	..	..	6	24	1	..	..
80	..	..	..	28	3	..	..
81	..	..	2	25	4	..	..
82	..	..	..	25	6	..	..
1883	..	..	17	14	..	..	..
Sums	..	..	68	350	47	..	..

Table IV—*continued.*

FALMOUTH—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9
1869	..	..	..	11	19	..	..
70	..	..	..	21	9	..	..
71	..	..	..	13	17	..	..
72	..	..	..	20	10	..	..
73	..	..	..	20	10	..	..
74	..	..	..	14	16	..	..
75	..	..	..	23	7	..	..
76	..	..	1	20	9	..	..
77	..	..	..	23	7	..	..
78	..	..	..	19	11	..	..
79	..	..	4	25	1	..	..
80	..	..	..	23	7	..	..
81	..	..	3	23	4	..	..
82	..	..	..	18	12	..	..
1883	..	..	..	28	2	..	..
Sums	..	..	8	301	141	..	..

May.

1869	..	..	..	8	23	..	..
70	..	..	..	8	23	..	..
71	..	..	..	8	21	2	..
72	..	..	..	16	15	..	..
73	..	..	..	10	21	..	..
74	..	..	..	10	21	..	..
75	..	..	..	..	30	1	..
76	..	..	..	13	18	..	..
77	..	..	..	13	18	..	..
78	..	..	..	..	31	..	..
79	..	..	..	15	16	..	..
80	..	..	..	7	23	1	..
81	..	..	..	5	24	2	..
82	..	..	..	4	27	..	..
1883	..	..	..	11	20	..	..
Sums	..	..	..	128	331	6	..

Table IV—*continued.*

FALMOUTH—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	..	26	4	..
70	..	..	..	..	23	7	..
71	..	..	..	..	29	1	..
72	..	..	..	..	27	3	..
73	..	..	..	..	22	8	..
74	..	..	..	..	26	4	..
75	..	..	..	..	28	2	..
76	..	..	..	..	23	7	..
77	..	..	..	..	17	13	..
78	..	..	..	..	22	8	..
79	..	..	..	..	30	..	..
80	..	..	..	..	27	3	..
81	..	..	..	1	25	4	..
82	..	..	..	..	30	..	..
1883	..	..	..	..	27	3	..
Sums	..	..	..	1	382	67	..

July.

1869	..	..	..	..	7	24	..
70	..	..	..	..	2	29	..
71	..	..	..	..	21	10	..
72	..	..	..	..	7	24	..
73	..	..	..	..	12	19	..
74	..	..	..	..	9	22	..
75	..	..	..	..	22	9	..
76	..	..	..	..	6	25	..
77	..	..	..	..	20	11	..
78	..	..	..	..	6	25	..
79	..	..	..	..	28	3	..
80	..	..	..	..	14	17	..
81	..	..	..	..	12	19	..
82	..	..	..	..	24	7	..
1883	..	..	..	..	27	4	..
Sums	..	..	..	..	217	248	..

Table IV—*continued.*

FALMOUTH—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9	50°—59°·9	60°—69°·9.	70°—79°·9.
1869	..	..	..	..	13	18	..
70	..	..	..	..	9	22	..
71	..	..	..	..	6	24	1
72	..	..	..	..	14	17	..
73	..	..	..	..	13	18	..
74	..	..	..	..	17	14	..
75	..	..	..	..	6	25	..
76	..	..	..	..	10	21	..
77	..	..	..	..	14	17	..
78	..	..	..	..	1	30	..
79	..	..	..	..	26	5	..
80	..	..	..	..	2	29	..
81	..	..	..	..	24	7	..
82	..	..	..	..	18	13	..
1883	..	..	..	..	16	15	..
Sums	..	..	..	..	189	275	1

September.

1869	..	..	..	..	24	6	..
70	..	..	..	..	25	5	..
71	..	..	..	1	20	9	..
72	..	..	..	3	13	14	..
73	..	..	..	..	28	2	..
74	..	..	..	..	26	4	..
75	..	..	..	..	9	21	..
76	..	..	..	..	27	3	..
77	..	..	..	1	28	1	..
78	..	..	..	..	16	14	..
79	..	..	..	..	30	..	..
80	..	..	..	..	20	10	..
81	..	..	..	..	29	1	..
82	..	..	..	..	29	1	..
1883	..	..	..	..	27	3	..
Sums	..	..	..	5	351	94	..

Table IV—*continued.*

FALMOUTH—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°–79°·9.
1869	..	..	..	10	20	1	..
70	..	..	..	5	26	..	..
71	..	..	..	1	30	..	..
72	..	..	..	15	16	..	..
73	..	..	..	12	19	..	..
74	..	..	..	2	29	..	..
75	..	..	..	6	24	1	..
76	..	..	..	4	27	..	..
77	..	..	..	3	28	..	..
78	..	..	..	8	21	2	..
79	..	..	..	5	26	..	..
80	..	..	..	15	16	..	..
81	..	..	1	9	21	..	..
82	..	..	..	7	24	..	..
1883	..	..	..	4	27	..	..
Sums	..	..	1	106	354	4	..

November.

1869	..	..	1	16	13	..	..
70	..	..	3	20	7	..	..
71	..	..	4	21	5	..	..
72	..	..	1	20	9	..	..
73	..	..	..	23	7	..	..
74	..	..	..	12	18	..	..
75	..	..	6	11	13	..	..
76	..	..	1	13	16	..	..
77	..	..	..	16	14	..	..
78	..	..	3	27	..	..	..
79	..	..	8	17	5	..	..
80	..	..	3	16	11	..	..
81	..	..	..	8	22	..	..
82	..	..	1	21	8	..	..
1883	..	..	..	22	8	..	..
Sums	..	..	31	263	156	..	..

Table IV—*continued.*

FALMOUTH—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	2	8	19	2	..	..
70	..	5	11	13	2	..	..
71	..	..	9	22	..	..	..
72	..	..	1	24	6	..	..
73	..	..	..	28	3	..	..
74	..	..	10	21	..	..	..
75	..	1	9	18	3	..	..
76	..	..	3	16	12	..	..
77	..	..	..	28	3	..	..
78	..	2	17	10	2	..	..
79	..	..	10	20	1	..	..
80	.	..	2	14	15	..	..
81	..	..	5	24	2	..	..
82	..	..	7	16	8	..	..
1883	..	..	4	24	3	..	..
Sums	..	10	96	297	62	..	..

STONYHURST.

January.

1869	..	1	7	23	..	..	..
70	..	5	14	12	..	..	..
71	..	16	13	2	..	..	..
72	..	..	12	19	..	..	..
73	..	4	10	16	1	..	..
74	..	..	9	22	..	..	..
75	..	1	6	23	1	..	..
76	..	4	12	15	..	..	..
77	..	..	12	19	..	..	..
78	..	1	14	15	1	..	..
79	..	23	7	1	..	..	..
80	..	13	10	7	1	..	..
81	4	15	7	5	..	..	..
82	..	..	8	23	..	..	..
1883	..	1	19	10	1	..	..
Sums	4	84	160	212	5	..	..

Table IV—*continued.*

STONYHURST—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	5	21	2	..	..
70	..	7	13	8	..	..	..
71	..	2	6	20	..	..	..
72	..	..	3	26	..	..	..
73	..	5	23	..	..	..	..
74	..	7	7	14	..	..	..
75	..	3	18	7	..	..	..
76	..	3	11	15	..	..	..
77	..	2	7	19	..	..	..
78	..	1	12	14	1	..	..
79	..	5	18	5	..	..	..
80	..	..	9	20	..	..	..
81	..	3	21	4	..	..	..
82	..	..	7	21	..	..	..
1883	..	..	10	18	..	..	..
Sums	..	38	170	212	3	..	..

March.

1869	..	..	23	8	..	..	..
70	..	..	16	15	..	..	..
71	..	..	8	18	5	..	..
72	..	1	7	19	4	..	..
73	..	..	18	13	..	..	..
74	..	2	4	25	..	..	..
75	..	..	17	14	..	..	..
76	..	1	18	12	..	..	..
77	..	1	16	14	..	..	..
78	..	1	14	16	..	..	..
79	..	4	10	17	..	..	..
80	..	..	11	20	..	..	..
81	..	3	13	15	..	..	..
82	..	..	4	25	2	..	..
1883	..	6	20	5	..	..	..
Sums	..	19	199	236	11	..	..

Table IV—*continued.*

STONYHURST—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	1	19	8	2	..
70	..	..	..	26	4	..	..
71	..	..	2	25	3	..	..
72	..	..	3	22	5	..	..
73	..	..	4	22	4	..	..
74	..	..	..	19	10	1	..
75	..	..	..	21	9	..	..
76	..	..	4	21	5	..	..
77	..	..	3	27	..	..	..
78	..	..	4	18	8	..	..
79	..	..	12	18	..	..	..
80	..	..	..	28	2	..	..
81	..	..	10	18	2	..	..
82	..	..	1	25	4	..	..
1883	..	..	1	29	..	..	..
Sums	..	..	45	338	64	3	..

May.

1869	..	..	1	28	2	..	..
70	..	..	..	11	20	..	..
71	..	..	..	13	16	2	..
72	..	..	..	22	9	..	..
73	..	..	..	20	11	..	..
74	..	..	..	19	12	..	..
75	..	..	..	23	8	..	..
76	..	..	..	19	12	..	..
77	..	..	3	21	7	..	..
78	..	..	..	8	23	..	..
79	..	..	3	19	9	..	..
80	..	..	..	19	12	..	..
81	..	..	..	11	15	5	..
82	..	..	..	13	18	..	..
1883	..	..	1	13	17	..	..
Sums	..	..	8	259	191	7	..

Table IV—*continued.*

STONYHURST—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	2	24	4	..
70	..	..	..	..	23	7	..
71	..	..	..	6	21	3	..
72	..	..	..	2	19	9	..
73	..	..	..	..	26	4	..
74	..	..	..	..	29	1	..
75	..	..	..	..	27	3	..
76	..	..	..	..	24	6	..
77	..	..	..	..	23	7	..
78	..	..	..	1	22	5	2
79	..	..	..	4	26	..	..
80	..	..	..	4	22	4	..
81	..	..	..	5	21	4	..
82	..	..	..	3	26	1	..
1883	..	..	..	1	26	3	..
Sums	..	..	..	28	359	61	2

July.

1869	..	..	..	..	12	18	1
70	..	..	..	..	14	17	..
71	..	..	..	..	27	4	..
72	..	..	..	..	12	18	1
73	..	..	..	..	18	11	2
74	..	..	..	..	16	15	..
75	..	..	..	..	19	12	..
76	..	..	..	..	11	18	2
77	..	..	..	..	28	3	..
78	..	..	..	..	17	12	2
79	..	..	..	..	28	3	..
80	..	..	..	..	27	4	..
81	..	..	..	..	22	9	..
82	..	..	..	..	26	5	..
1883	..	..	..	1	24	6	..
Sums	..	..	..	1	301	155	8

Table IV—*continued.*

STONYHURST—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	2	22	5	2
70	..	..	..	..	17	14	..
71	..	..	..	..	11	20	..
72	..	..	..	..	22	9	..
73	..	..	..	..	23	8	..
74	..	..	..	..	27	4	..
75	..	..	..	..	15	16	..
76	..	..	..	1	16	14	..
77	..	..	..	..	20	11	..
78	..	..	..	..	17	14	..
79	..	..	..	..	27	4	..
80	..	..	..	..	16	15	..
81	..	..	..	..	29	2	..
82	..	..	..	..	23	8	..
1883	..	..	..	..	27	4	..
Sums	..	..	..	3	312	148	2

September.

1869	..	..	..	..	25	5	..
70	..	..	..	1	29	..	..
71	..	..	..	12	17	1	..
72	..	..	..	9	13	8	..
73	..	..	..	6	24	..	..
74	..	..	..	1	28	1	..
75	..	..	..	..	23	7	..
76	..	..	..	3	26	1	..
77	..	..	..	9	21	..	..
78	..	..	..	5	20	5	..
79	..	..	..	5	25	..	..
80	..	..	..	1	23	6	..
81	..	..	..	..	30	..	..
82	..	..	..	6	24	..	..
1883	..	..	..	1	28	1	..
Sums	..	..	..	59	356	35	..

Table IV—*continued.*

STONYHURST—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	4	11	14	2	..
70	..	..	..	24	7	..	..
71	..	..	..	..	22	9	..
72	..	..	..	26	5	..	..
73	..	..	6	16	8	1	..
74	..	..	..	21	10	..	..
75	..	..	..	21	10	..	..
76	..	..	1	13	16	1	..
77	..	..	2	22	7	..	..
78	..	..	1	11	17	2	..
79	..	..	2	21	8	..	..
80	..	..	10	20	1	..	..
81	..	..	5	22	4	..	..
82	..	..	..	17	14	..	..
1883	..	..	1	19	11	..	..
Sums	..	..	32	264	154	15	..

November.

1869	..	1	10	15	4	..	..
70	..	..	15	15	..	..	..
71	..	2	18	10	..	..	..
72	..	..	9	18	3	..	..
73	..	..	8	21	1	..	..
74	..	..	11	14	5	..	..
75	..	..	16	10	4	..	..
76	..	..	12	15	3	..	..
77	..	..	4	24	2	..	..
78	..	2	22	6	..	..	..
79	..	2	15	12	1	..	..
80	..	3	12	14	1	..	..
81	..	..	3	18	9	..	..
82	..	..	15	13	2	..	..
1883	..	..	7	22	1	..	..
Sums	..	10	177	227	36	..	..

Table IV—*continued.*

STONYHURST—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	6	18	7	..	..	..
70	..	13	13	5	..	..	..
71	..	3	12	16	..	..	..
72	..	3	12	16	..	..	..
73	..	2	6	23	..	..	..
74	1	15	11	4	..	..	..
75	..	3	11	17	..	..	..
76	..	2	5	24	..	..	..
77	..	1	8	22	..	..	..
78	1	17	11	2	..	..	..
79	..	12	14	5	..	..	..
80	..	2	15	14	..	..	..
81	..	4	15	12	..	..	..
82	..	7	13	11	..	..	..
1883	..	1	13	17	..	..	..
Sums	2	91	177	195	..	..	..

KEW.

January.

1869	..	2	6	22	1	..	..
70	..	5	11	15	..	..	..
71	..	10	19	2	..	..	..
72	..	..	7	24	..	..	..
73	..	..	12	16	3	..	..
74	..	..	9	21	1	..	..
75	..	1	4	24	2	..	..
76	..	7	14	9	1	..	..
77	..	..	10	20	1	..	..
78	..	1	15	13	2	..	..
79	..	16	12	3	..	..	..
80	..	11	17	2	1	..	..
81	2	12	11	6	..	..	..
82	..	1	10	20	..	..	..
1883	..	..	12	18	1	..	..
Sums	2	66	169	215	13	..	..

Table IV—*continued.*

KEW—*continued.*

February.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	2	20	6	..	..
70	..	7	11	9	1	..	..
71	..	1	3	23	1	..	..
72	..	..	1	26	2	..	..
73	..	4	20	4	..	..	..
74	..	5	9	14	..	..	..
75	..	5	19	4	..	..	..
76	..	4	8	13	4	..	..
77	..	1	4	20	3	..	..
78	..	1	9	16	2	..	..
79	..	3	14	10	1	..	..
80	..	1	10	17	1	..	..
81	..	1	19	8	..	..	..
82	..	..	9	16	3	..	..
1883	..	..	5	23	..	..	..
Sums	..	33	143	223	24	..	..

March.

1869	..	..	21	10	..	..	..
70	..	1	17	9	4	..	..
71	..	..	5	21	5	..	..
72	..	..	9	14	8	..	..
73	..	..	9	21	1	..	..
74	..	2	3	20	6	..	..
75	..	..	16	13	2	..	..
76	..	1	12	16	2	..	..
77	..	..	15	16	..	..	..
78	..	..	14	13	4	..	..
79	..	1	11	19	..	..	..
80	..	..	4	23	4	..	..
81	..	1	12	13	5	..	..
82	..	..	3	23	5	..	..
1883	..	4	21	6	..	..	..
Sums	..	10	172	237	46	..	..

Table IV—*continued.*

KEW—*continued.*

April.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	1	12	15	2	..
70	..	..	3	15	11	1	..
71	..	..	..	15	15	..	..
72	..	..	1	17	12	..	.
73	..	..	3	19	8	..	..
74	..	..	..	15	15	..	..
75	..	..	..	23	7	..	..
76	..	..	4	14	12	..	..
77	..	..	..	24	6	..	..
78	..	..	1	15	14	..	..
79	..	..	4	24	2	..	..
80	..	..	..	19	11	..	..
81	..	..	6	15	9	..	..
82	..	..	..	23	7	..	..
1883	..	..	1	21	8	..	..
Sums	..	..	24	271	152	3	..

May.

1869	..	..	..	8	23	..	..
70	..	..	..	10	16	5	..
71	..	..	..	14	14	3	..
72	..	..	..	14	16	1	..
73	..	..	..	12	19	..	..
74	..	..	..	18	9	4	..
75	..	..	..	1	27	3	..
76	..	..	..	19	12	..	..
77	..	..	2	10	19	..	..
78	..	..	..	1	27	3	..
79	..	..	1	15	15	..	..
80	..	..	..	14	15	2	..
81	..	..	..	6	21	4	..
82	..	..	..	6	25	..	..
1883	..	..	1	9	17	4	..
Sums	..	..	4	157	275	29	..

Table IV—*continued.*

KEW—*continued.*

June.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	..	25	5	..
70	..	..	..	..	12	16	2
71	..	..	..	4	20	6	..
72	..	..	..	..	18	10	2
73	..	..	..	..	17	13	..
74	..	..	..	1	19	10	..
75	..	..	..	..	15	15	..
76	..	..	..	..	17	12	1
77	..	..	..	..	11	19	..
78	..	..	..	..	19	6	5
79	..	..	..	..	27	3	..
80	..	..	..	1	16	13	..
81	..	..	..	3	10	17	..
82	..	..	..	1	25	4	..
1883	..	..	..	..	9	20	1
Sums	..	..	..	10	260	169	11

July.

1869	..	..	..	..	5	22	4
70	..	..	..	..	5	20	6
71	..	..	..	..	14	17	..
72	..	..	..	..	5	23	3
73	..	..	..	..	5	23	3
74	..	..	..	..	3	25	3
75	..	..	..	..	19	12	..
76	..	..	..	..	2	24	5
77	..	..	..	..	11	20	..
78	..	..	..	..	5	24	2
79	..	..	..	..	23	8	..
80	..	..	..	..	10	21	..
81	..	..	..	..	8	15	8
82	..	..	..	..	12	19	..
1883	..	..	..	..	17	13	1
Sums	..	..	..	..	144	286	35

Table IV—*continued.*

KEW—*continued.*

August.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	..	..	15	14	2
70	..	..	..	..	13	18	..
71	..	..	..	..	3	26	2
72	..	..	..	..	13	18	..
73	..	..	..	..	8	23	..
74	..	..	..	..	15	16	..
75	..	..	..	..	9	21	1
76	..	..	..	..	7	19	5
77	..	..	..	..	10	20	1
78	..	..	..	..	4	27	..
79	..	..	..	..	16	15	..
80	..	..	..	..	4	27	..
81	..	..	..	..	20	11	..
82	..	..	..	..	18	13	..
1883	..	..	..	..	10	21	..
Sums	..	..	..	..	165	289	11

September.

1869	..	..	..	..	18	12	..
70	..	..	..	1	25	4	..
71	..	..	..	3	16	13	..
72	..	..	..	5	11	11	1
73	..	..	..	1	27	2	..
74	..	..	..	..	22	8	..
75	..	..	..	..	13	17	..
76	..	..	..	1	25	4	..
77	..	..	..	9	17	4	..
78	..	..	..	4	20	6	..
79	..	..	..	1	29	..	..
80	..	..	..	..	15	14	1
81	..	..	..	1	27	2	..
82	..	..	..	3	24	3	..
1883	..	..	..	1	27	2	..
Sums	..	..	..	30	316	102	2

Table IV—*continued.*

KEW—*continued.*

October.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9.	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	..	3	12	14	2	..
70	..	..	..	12	19	..	..
71	..	..	..	13	18	..	..
72	..	..	1	21	9	..	..
73	..	1	3	14	12	1	..
74	..	..	..	10	21	..	..
75	..	..	..	19	11	1	..
76	..	..	1	11	14	5	..
77	..	..	1	18	11	1	..
78	..	..	2	10	17	2	..
79	..	..	..	18	13	..	..
80	..	..	5	14	12	..	..
81	..	..	5	22	4	..	..
82	..	..	..	13	17	1	..
1883	..	..	..	15	16	..	..
Sums	..	1	21	222	208	13	..

November.

1869	..	..	11	12	7	..	..
70	..	..	13	16	1	..	..
71	..	3	19	8	..	..	..
72	..	..	8	15	7	..	..
73	..	..	2	24	4	..	..
74	..	3	9	15	3	..	..
75	..	1	12	11	6	..	..
76	..	..	9	15	6	..	..
77	..	..	4	18	8	..	..
78	..	..	14	16	..	..	..
79	..	5	11	14	..	..	..
80	..	2	11	12	5	..	..
81	..	..	3	12	15	..	..
82	..	..	11	13	6	..	..
1883	..	..	7	22	1	..	..
Sums	..	14	144	223	69	..	..

Table IV—*continued.*

KEW—*continued.*

December.

Year.	10°—19°·9.	20°—31°·9.	32°—39°·9.	40°—49°·9	50°—59°·9.	60°—69°·9.	70°—79°·9.
1869	..	5	10	15	1	..	..
70	1	13	10	7	..	..	..
71	..	4	10	17	..	..	..
72	..	..	6	24	1	..	..
73	..	5	4	20	2	..	..
74	..	12	14	5	..	..	..
75	..	6	9	15	1	..	..
76	..	..	6	16	9	..	..
77	..	..	11	20	..	..	..
78	..	15	10	4	2	..	..
79	..	15	13	3	..	..	..
80	..	..	8	20	3	..	..
81	..	1	11	19	..	..	..
82	..	5	12	8	6	..	..
1883	..	1	12	17	1	..	..
Sums	1	82	146	210	26	..	..

The figures were then divided by 15 to obtain the mean frequency of the different temperatures per month, and Table V was thus formed, which is precisely similar in its arrangement to the frequency table in Table III.

Table V.—Frequency of Mean Daily Temperatures.

VALENCIA.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
10°·0—19°·9	..	..	..	..	..	..	..	..	..	..	..	..
20·0—31·9	0·3	0·1	..	..	..	..	..	..	..	..	..	0·2
32·0—39·9	4·0	3·1	2·3	0·1	..	..	..	..	..	..	1·6	5·5
40·0—49·9	22·3	21·7	24·2	16·7	7·2	0·2	..	..	0·4	9·5	18·4	20·1
50·0—59·9	4·4	3·3	4·5	13·0	23·5	27·1	21·6	18·3	25·0	20·8	10·0	5·2
60·0—69·9	..	..	..	0·1	0·3	2·7	9·4	12·6	4·6	0·7	..	..
70·0—79·9	..	..	..	..	..	..	..	0·1	..	..	..	..
ARMAGH.												
10·0—19·9	..	..	..	..	..	..	..	..	..	..	..	0·1
20·0—31·9	2·8	0·9	0·2	..	..	..	..	..	..	..	0·4	5·4
32·0—39·9	11·7	8·8	12·0	2·0	0·1	..	..	..	..	1·8	10·9	11·3
40·0—49·9	16·0	17·9	16·8	22·1	14·7	2·1	0·1	0·2	5·7	18·5	15·9	13·9
50·0—59·9	0·5	0·6	2·0	5·7	15·9	24·9	23·1	21·6	22·8	10·3	2·8	0·3
60·0—69·9	..	..	..	0·1	0·2	3·0	7·8	9·1	1·4	0·3	..	..
70·0—79·9	..	..	..	..	..	..	..	..	..	..	..	..
GLASGOW.												
10·0—19·9	0·2	..	..	..	..	..	..	..	..	..	..	0·3
20·0—31·9	4·0	2·1	1·1	..	..	..	..	..	..	..	1·6	5·5
32·0—39·9	13·2	11·9	14·5	3·5	0·4	..	..	..	..	2·8	12·2	12·2
40·0—49·9	13·5	14·1	15·1	22·5	17·1	2·4	..	0·7	6·7	19·7	14·3	12·9
50·0—59·9	0·1	0·1	0·3	3·9	12·9	25·5	24·3	24·9	22·7	8·4	11·8	0·1
60·0—69·9	..	..	..	..	0·5	2·0	6·5	5·5	0·6	0·1	0·1	..
70·0—79·9	..	..	..	..	..	0·1	0·2	..	..	..	..	..

Table V—*continued.*

ABERDEEN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
10·0—19·9	0·1	..	..	..	..	..	..	..	..	..	..	0·2
20·0—31·9	3·5	2·2	2·4	0·1	..	..	..	..	..	..	0·7	5·7
32·0—39·9	15·7	13·7	14.8	6·3	1·3	..	..	..	..	3·0	12·9	14·7
40·0—49·9	11·8	12·1	13·9	21·2	20·9	7·1	0·3	1·0	8·4	18·9	15·5	10·5
50·0—59·9	..	0·2	0·5	2·5	8·6	21·6	25·9	26·9	20·9	9·0	0·9	..
60·0—69·9	..	..	..	..	0·1	1·2	4·7	3·1	0·7	0·1	..	..
70·0—79·9	..	..	..	..	..	..	0·1	..	..	..	..	..
FALMOUTH.												
10·0—19·9	..	..	..	..	..	..	..	..	..	..	..	..
20·0—31·9	1·1	0·5	..	..	..	..	..	..	..	..	..	0·7
32·0—39·9	5·3	3·7	4·5	0·5	..	..	..	..	..	0·1	2·1	6·4
40·0—49·9	21·1	21·0	23·3	20·1	8·5	0·1	..	..	0·3	7·1	17·5	19·8
50·0—59·9	3·6	3·2	3·1	9·4	22·1	25·5	14·5	12·6	23 4	23·6	10·4	4·1
60·0—69·9	..	..	..	..	0·4	4·5	16·5	18·3	6·3	0·3	..	..
70·0—79·9	..	..	..	..	..	..	..	0·1	..	..	..	..
STONYHURST.												
10·0—19·9	0·3	..	..	..	..	..	..	..	..	..	..	0·1
20·0—31·9	5·6	2·5	1·3	..	..	..	..	..	..	..	0·7	6·1
32·0—39·9	10·7	11·3	13·3	3·0	0·5	..	..	..	..	2·1	11·8	11·8
40·0—49·9	14·1	14·1	15·7	22·5	17·3	1 9	0·1	0·2	3·9	17·6	15·1	13·0
50·0—59·9	0·3	0·2	0·7	4·3	12·7	23·9	20·1	20·8	23·7	10·3	2·4	..
60·0—69·9	..	..	..	0·2	0 5	4·1	10·3	9·9	2·3	1·0	..	..
70·0—79 9	..	..	..	..	..	0·1	0·5	0·1	..	..	..	..

Table V—*continued.*

KEW.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
10°0—19°9	0·1	..	..	..	..	..	..	..	..	..	..	0·1
20·0—31·9	4·4	2 2	0·7	..	..	..	..	..	..	0·1	0·9	5·5
32·0—39·9	11·3	9·5	11·5	1·6	0·3	..	..	..	..	1·4	9·6	9·7
40·0—49·9	14·2	14 8	15·8	18·1	10·5	0·7	..	..	2 0	14·8	14·9	14 0
50·0—59·9	0·9	1·6	3·1	10·1	18·3	17·3	9·6	11·0	21·1	13·8	4·6	1·7
60·0—69·9	..	..	..	0·2	1·9	11·3	19·1	19 3	6·8	0·9	..	..
70 0—79·9	..	..	..	..	..	0 7	2·3	0·7	0·1	..	..	..

It seemed of interest to exhibit these figures graphically, and Plate 9, illustrating them, has been drawn. All the curves are not shown. Those for Valencia and Falmouth agree so closely, except in July and August, that one line will represent both for most of the year. Similarly, the curves for Armagh, Glasgow, and Stonyhurst agree so exactly in every month that one line suffices to represent them.

I have therefore shown on the diagram four curves for all the months, and five for July and August. The curves represent respectively (1) Aberdeen, (2) Kew, (3) Armagh, Glasgow, or Stonyhurst, (4) Valencia or Falmouth, and (5) Falmouth alone, in the two months specified.

In the diagrams the abscissæ represent temperatures and the ordinates the number of days during which those temperatures were experienced.

It will be noticed that the line representing Aberdeen lies generally on the left hand of the other lines, showing that the lower temperatures are most prevalent at that, the most northern station under consideration. In all but the summer months the curves for the two south-western observatories show decided peaks, corresponding to temperatures between 40° and 50° in winter and between 50° and 60° in summer, while at all the other stations the maxima are not so marked.

The difference between Valencia and Falmouth in August is particularly striking, the figures from 40° to 50° and from 50° to 60° being exactly reversed, Falmouth showing 18·3 days of the higher and Valencia of the lower temperature.

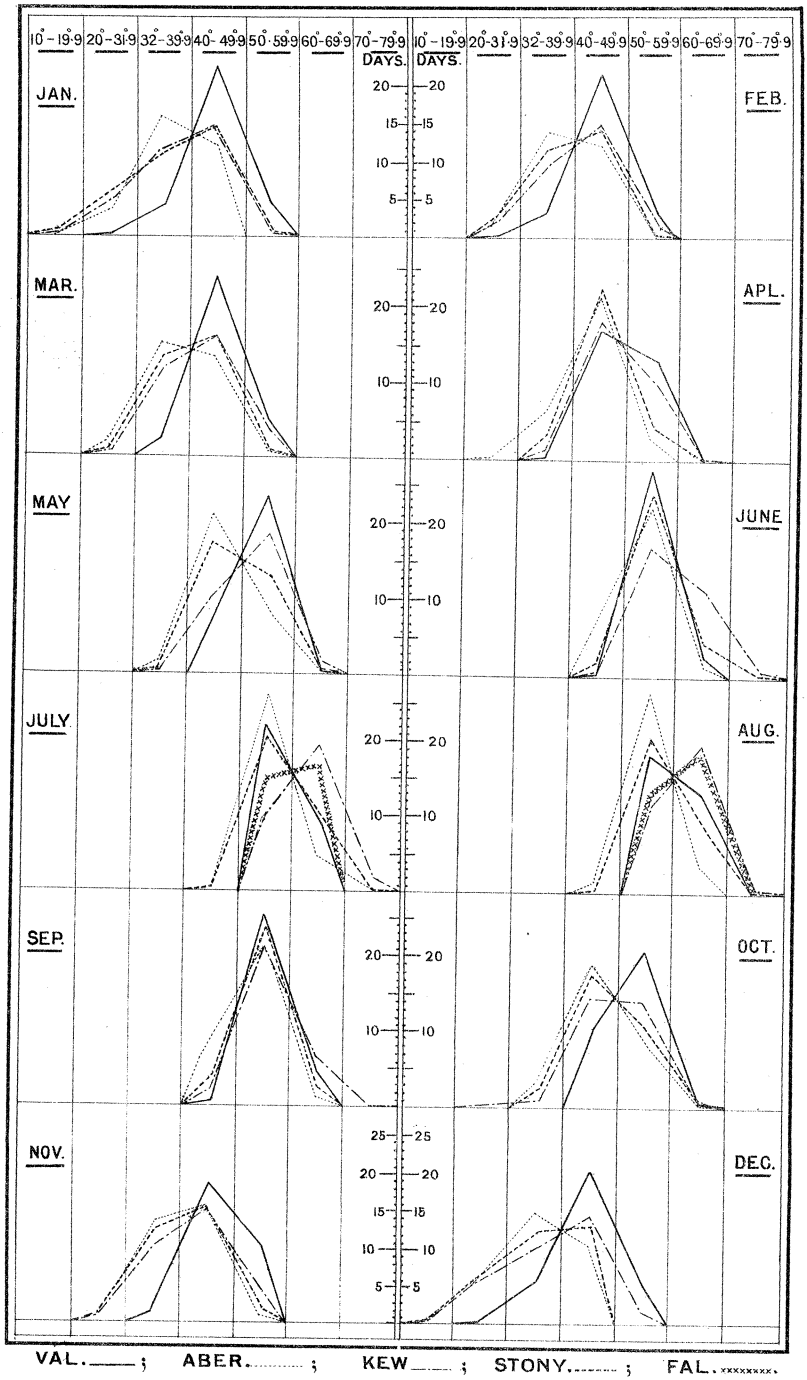
The two months July and August exhibit the chief material difference in climate between the south-west of Ireland and the south of Cornwall—a difference to the advantage of the latter.

We also see from Table V that at both of these south-western stations the mean daily temperature in July never falls below 50°, and never rises above 70°. This amount of equability of temperature is approached, but not quite reached, at several other stations in the same month. At several of the observatories the range of daily mean temperature in winter exceeds forty degrees.

The outcome of the entire enquiry is that, as regards the 15 years under consideration, both (1) the variability of temperature, as defined in the beginning of the paper, and (2) the range of mean temperature, are least at Valencia and Falmouth, the two stations most exposed to the influence of the Atlantic Ocean. Then follows Aberdeen, which, from its close proximity to the sea, enjoys a more equable climate than might have been anticipated from its latitude.

The three stations of Glasgow, Stonyhurst, and Armagh form a third group, and they only differ *inter se* in unimportant particulars.

Diagram showing the distribution of Mean daily Temperature in the British Isles 1869–1883 inclusive.



West, Newman, lith.

Kew comes last, as the most continental position, with the greatest variability and the highest amount of range. This latter is due to the greater prevalence of high temperatures there than elsewhere.

III. "The Rupture of Steel by Longitudinal Stress." By CHAS. A. CARUS-WILSON. Communicated by Professor G. H. DARWIN, F.R.S. Received March 10, 1890.

(Abstract.)

This paper gives an account of experiments made with a view to determining the nature of the resistance that has to be overcome in order to produce rupture in a steel bar by longitudinal stress.

The stress required to produce rupture is in every case computed by dividing the load on the specimen at the moment of breaking by the contracted area at the fracture measured after rupture; this stress is called the "true tensile strength" of the material.

It is well known that any want of uniformity in the distribution of the stress over the ruptured section causes the bar to break at a lower stress than it would if the stress was uniformly distributed. Hence anything that causes want of uniformity is prejudicial; for instance, a groove turned in a cylindrical steel bar will produce want of uniformity, and will consequently be prejudicial, the stress at rupture being lower according as the angle of the groove is more acute. The most favourable condition of test might appear to be that in which a bar of uniform section throughout its length was allowed to draw out freely before breaking, since in this case the stress must be most uniformly distributed.

Experiment, however, shows that the plain bar is not always the strongest. So long as the want of uniformity of stress is considerable, owing to the groove being cut with a very sharp angle, the plain bar is stronger than the grooved bar; but, if the groove be semicircular instead of angular, the grooved bar is considerably stronger than the plain, in spite of the fact that the stress is more uniformly distributed in the latter.

It would seem, then, that we can strengthen a bar over any given section by adding material above and below it, the change in section being gradual; but such an addition of material cannot strengthen the bar if rupture is caused by a certain intensity of tensile stress over the ruptured section; the added material cannot increase the resistance of the ruptured section to direct tensile stress, but it can increase the resistance to the shearing stress.

The resistance of a given section of a steel bar does not, then, depend on its section at right angles to the axis, but on its section at